

Case Report

“Manja” – A dangerous thread

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Abstract

Every year many innocent lives are claimed and many more suffer severe life threatening injuries in India, Pakistan and Bangladesh due to accidental injuries glass-coated kite-lines (manja) that are sharp, cutting effect. The present article discusses the mechanism, pathology, and medico-legal aspects and how to prevent manja-related injuries.

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1. Introduction

Uttarayan is the festival of kites, celebrated in early January throughout India, Pakistan and Bangladesh. This festival is known by various names depending on the region to celebrate arrival of spring after winter. Makar Sankranti on January 14th, Republic day on January 26th and Independence Day on August 15th each year are the biggest kite festival days in India. In Pakistan, Basant is a two day festival when this game is played. In southeastern Brazil, during winter months from June to August there are strong winds which are good weather conditions for flying kites.¹ The game of kite fighting is very common, and usually is the sole purpose of the kite flying in these countries. Flying kites from roof of buildings, running behind the cut down stray kite, using metal kite-lines, and aerial firing after cutting rival kite to celebrate success are common activities during this festival. Numerous casualties and some fatalities falls from rooves, accidents on road while chasing kites, electrocution, and firearm injuries occur.

In Pakistan, about 450 people have been killed during the kite-flying festival in the last ten years. Most of them were teenagers and children. At least 19 people, including 8 children, lost their lives and more than 500 were injured while celebrating the festival in the year 2005 alone. In most cases, death had been caused by the special kite-lines carrying razor-like metal strips called “manja”. In 2005 in Lahore, when a girl died due to cut throat injury by manja, the Supreme Court banned kite-flying. Subsequently manja was included in the list of dangerous materials, and court passed an order that ‘using manja’ was a punishable offence.² Statistics about fatalities and casualties caused due to kite-flying in India, Bangladesh and other countries are not available. However similar cases are reported from time to time.³ Hence it is important to understand the mechanism, pathology, medico-legal aspect, and prevention measures for injuries caused by manja.

2. Definition of manja

Manja is the kite-line made of cotton or nylon string that is coated with fine glass powder using glue and other chemicals as adhesives (Fig. 1). Manja is used to cut down opponent’s kite-string in a kite fighting game.

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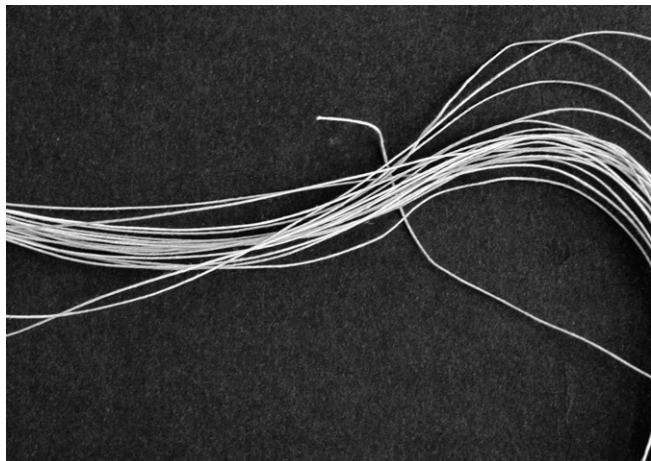


Fig. 1. Manja: cotton line coated with boiled mixture of fine glass powder, water soluble glue and color in water.

3. Preparing manja

There are many methods of preparing manja. Cotton thread of any thickness or brand can be used for making manja. However, fine, smooth and strong threads are preferred. Recently nylon threads are also being used. Fine glass powder is used in all these methods. Glass from bottles, bulbs or tube-lights is ground and passed through sieve to get fine quality of powder. After coating the string with glass powder admixed with adhesives, it is dried in the open at room temperature.

Some of the methods for manufacturing manja are as follows:

1. Thread is coated with the paste consisting of fine glass powder, cactus milk, soda ash, boiled rice and color. Sometimes juice extracted from aloe vera plant or egg albumin is also added to the paste or directly applied to the manja to make it smoother and provide additional adhesive effect. Cooked wheat paste can be used instead of boiled rice. Boiled rice or cooked wheat paste act as adhesive to hold fine glass powder to the kite-string and cactus milk to give a smooth texture. Sometimes egg shells, gum crystals, and the soot deposited on a surface from a burning lamp may be added to the paste.⁴
2. Coating kite-string by passing it through the boiled mixture of fine glass powder, water, color, and water soluble glue.
3. Using steam and chemical glue so glass pieces adhere to the string, and thus the manja dries faster and lasts longer.
4. Coating the kite-line with ground glass and paper glue is a common practice in Brazil. The coating is called *cerol* by the Brazilians. This comes from a combination of the Portuguese word *linho* (linen) and the Latin word *cero-tumi*, which means wax.¹
5. Recently nylon manja also known locally as ‘Chinese’ kite thread is marketed in India. It is a homemade nylon string coated with powdered glass and color.

Sometimes sacred ash (Angara) from dargah or temple is also added in the paste for manufacturing manja due to the belief that this would make it stronger, and, also gives success in kite fighting games. At some places copper sulfate is the main ingredient along with glue and glass powder.

4. Mechanism of causation of injury

Injuries by manja are commonly sustained by kite-flyers, riders of two wheelers and pedestrians. Sometimes, people near kite-flyers are injured.

Hand is the commonest site of injury to a kite-flyer. They are caused by the fast moving manja as the coated string during kite-flying is let-out and is held with fingers and palm wrapped around it. Usually the injury is over lateral and palmar aspect of distal and middle digits of the index finger, and the palmar aspect of thumb. Injuries can also be seen on lateral and palmar aspect of middle finger, and the palm. They are along the joints creases of the finger, and the wounds are deeper than expected. Sometimes the wrist is entangled and may be injured. Scars related to these injuries may be seen in those flying kites with manja for many years.

Pedestrians or two-wheeler riders may sustain injuries when they come across the manja of a flying kite or a cut-off kite (Figs. 2 and 3). Injuries sustained by two-wheeler riders are more severe compared to pedestrians as the severity of injury depends on both the speed of the two-wheeler and the moving kite that is directly related to wind speed. More is the speed, more severe is the injury. Injuries are usually caused to exposed parts of the body. Body parts covered with clothes are always protected as manja cannot cut through garments. Helmet protects the injuries to face but neck is still exposed. In pedestrians or two-wheeler riders the common sites of injuries are



Fig. 2. An abrasion sustained by a motor-bike rider from manja.

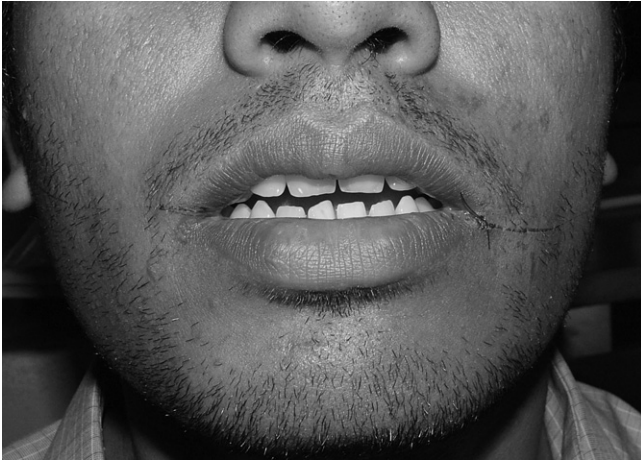


Fig. 3. When the rider in Fig. 3 saved himself by bending forward, the pillion rider sustained incised wound at left angle of mouth and abrasion at right angle of mouth.

- (i) neck,
- (ii) the angle of the mouth with extension to cheeks,
- (iii) philtrum and adjoining areas,
- (iv) bridge of nose,
- (v) forehead near the hair line,
- (vi) ear along attachment of pinna, however the anterior aspect is usually spared.

Usually injuries over neck, and forehead are transversely or obliquely placed, and over the philtrum and bridge of nose are transversely placed.

Severity of injury caused by manja does not depend on size of the kite or thickness of the kite-line. Children are more easily injured compared to adults.

The microscopic study of manja revealed that smooth textured manja is more sharp and fatal. The amount of fine and sharp cutting glass particles present per centimeter of manja length is more in smooth textured manja compared to rough textured manja (Fig. 4).

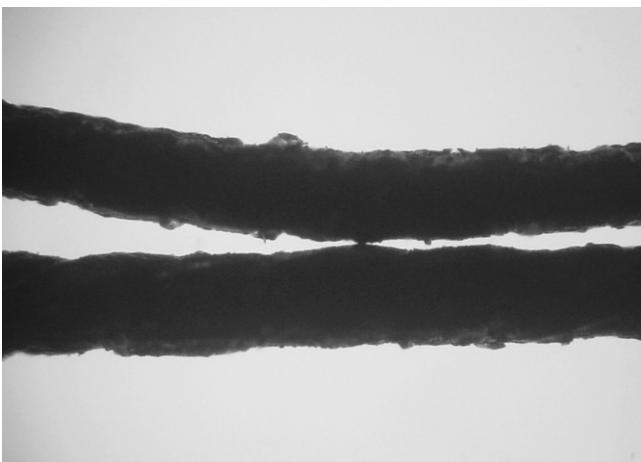


Fig. 4. Microphotograph of manja showing adherent fine glass powder particles ($\times 10$).

5. Pathology of injuries caused by manja

Injuries possible with manja are either linear abrasions (kite-line burns or string burns) or incised wound. In the literature lacerated wounds caused by manja are described.¹ Poor description of injuries is common and is a reflection of the poor state of medico-legal teaching in medical schools. The correct use of terms will speed up court proceedings and save embarrassment in the witness box. The difference in sentencing for conviction for an assault with a punch, which produces a laceration, and a slash with a knife, which results in an incised wound, could be the difference between a non-custodial punishment and four years in prison.⁵ Lacerated wounds are defined as, tearing of the skin and subcutaneous tissues, and can be caused by splitting by crushing of the skin between two hard objects or overstretching or grinding compression⁶ or there are tears of skin, mucosae, visceral surfaces or parenchyma produced by blunt force which crushed or stretched tissues beyond the limits of their elasticity.⁷ However, incised wounds may be caused by any object with an edge (linear or pointed), ranging from instruments such as knives or razor blades to fragments of china glass or metal, whilst even edges of paper or grass can cause cuts.⁶ When the edges of the weapon are dull, the incised wounds tend to have ragged margins and the edges of the cutaneous defect may be abraded, rather than having only those of a “pure” incised wound.⁷

6. Characteristics of injuries caused by manja

1. They are always transversely or obliquely placed encircling the contour of the body.
2. They are usually single.
3. They are unidirectional.
4. Edges of the incised wound are abraded.
5. Margins of the incised wound are ragged.
6. Incised wounds are deepest at the center of the injury.
7. Glass particles can be found at the angle of the injury in the opposite direction of the moving manja.

7. Management of the wound

The management of the incised wound caused by manja is similar to that of other incised wounds. Careful examination may reveal that tissue damage is deeper than expected, and all fine glass particles should be removed from the wound. Incised wound inflicted on hands and wrists may involve internal structures like tendons and blood vessels. Trachea and blood vessels could be damaged when injuries are present over anterior surface of neck.

8. Medico-legal aspect of the wound

Injuries caused by manja are always accidental. However, these injuries can disfigure face permanently by

chopping of the ear or nose, or by the scar formed after healing of incised wound. Incised wounds around neck have proved fatal when the blood vessels and/or the respiratory tract were involved in the injury. Manja could be considered a dangerous weapon under Indian Penal Code sections 324 and 326, which state a dangerous weapon is “any instrument for shooting, stabbing or cutting, or any instrument which, used as a weapon of offence, is likely to cause death”. It can also cause grievous hurt (Indian Penal Code section 320) by endangering the life of a person, or by cutting-off any member of the body, or by hampering function of any member of the body.

9. Prevention of injuries

Injuries by manja to kite-flyer's hand can be prevented by wearing gloves. Wearing full sleeves shirt, trouser and shoes prevents injuries to other body parts of the kite-flyer. For avoiding manja injuries to pedestrians and riders of two-wheelers, the kite-flying should be permitted only at designated locations during festivals. Such sites must be away from town and traffic. While choosing these sites, precaution should be taken that they are not near an airport, electric service line or bird sanctuary. Manja kite-lines are known to cause damage to airplanes, fatalities by elec-

trocution, and injures and death of birds. There should be joint effort from agencies related to games and sports, traffic police, town administration and public representatives. Rules and regulations must be passed, and implemented. The most important thing is to launch an awareness program for kite-flyer as well as those who don't fly kites. These programs should explain the hazards and risks related to kite flying and emphasize the precautionary measures that can be undertaken.

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